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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/813,768	03/31/2004	Peng Chang	SAR 14951	5254

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EXAMINER

NAKHJAVAN, SHERVIN K

ART UNIT	PAPER NUMBER
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2621

DATE MAILED: 02/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/813,768	CHANG ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Shervin Nakhjavan	2621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 24 and 25 is/are allowed.
- 6) ☒ Claim(s) 1-4,6-9,11-17,21,23 and 26-30 is/are rejected.
- 7) ☒ Claim(s) 5,10,18-20 and 22 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. ____.  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date ____.   | 6) <input type="checkbox"/> Other: ____.                                    |

**DETAILED ACTION**

***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 4, 11-16, 23 and 26-28 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claims 4 and 14, Line 1, the phrases “the parameter” in claim 4, and “the vehicle” in claims 4 and 14 seem to be referring to a previously cited parameter, platform and vehicle which does not appear in the claims;

Regarding claim 11, Lines 6-7, the citation, compensating of the map being based on differences between *the assumed ground plane* and *the assumed ground plane* is ambiguous and therefore indefinite for the examiner to make a proper examination of the claim under 37 CFR 1.104;

Regarding claim 23, the phrase “the computer readable medium” lacks antecedent bases because it has not previously been defined;

Regarding claim 26, Line 5, the phrase “the original stereo images” seems to be referring to a previously cited stereo image which does not appear in the claim;

Regarding claim 28, the phrase “the target” seems to be referring to previously cited target which does not appear in the claim.

Therefore, the above phrases are vague and confusing because it is unclear what feature or element is further limited by this language.

Claims 12-16 and 27 variously depend from a indefinite base claim and are thus themselves indefinite.

***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1, 2, 6, 21, 26, 27 and 30 are rejected under 35 U.S.C. 102(e) as being anticipated by Brumitt (US 5,563,988).

Brumitt teaches the limitation of claim 1, a method of performing vision processing comprising: producing a depth map of a scene proximate a platform, wherein the depth map is based on an assumed ground plane (Column 7, Line 66 through Column 8, Line 5, wherein the range images are the depth map images and are generated based on a scene which includes an assumed ground plane as will be further discussed in relation to actual ground identifying teaching); identifying an actual plane using the depth map (Column 11, Line 59, through Column 12, Line 4, wherein based on the original depth image of the scene, the pixel values of the boundaries of the scene which are considered to be part of the assumed ground plane are considered for

Art Unit: 2621

defining the actual ground plane); and compensating the depth map for differences between the assumed ground plane and the actual ground plane (Column 12, Lines 10-17, wherein the pixels location on the map are rotation for roll and the pitch of the camera as part of the compensation for differences between the originally assumed ground plane and the newly generated actual ground plane);

Brumitt teaches limitation of claim 2, method further including the step of comparing the depth map to a plurality of templates to identifying a match between the depth map and at least one template (Column 11, Lines 15-21, wherein the previously characterized objects or persons are the templates which the system performs the matching of the depth image objects with);

Brumitt teaches limitation of claim 6, accessing at least from a database comprising a plurality of templates (Column 11, Lines 15-21, wherein having a database for for retrieving comparable data);

Brumitt teaches the computer readable medium of claim 21 storing a vision system program corresponding to method of claim 1 above (Column 5, Lines 10-12);

Brumitt teaches limitation of claim 26 corresponding to the method of claim 1 above utilizing stereo images (Column 8, Lines 1-5);

Brumitt teaches limitation of claim 27, the technique of correction is a vertical translation of the original stereo images (Column 12, Lines 10-17, where x, y, z positions are corrected for by translation in y or vertical direction);

Brumitt teaches limitation of computer readable medium of claim 30 storing a vision system program that controls a computer to perform the steps of the corresponding method claim 26 (Column 5, Lines 10-12).

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 2-4, 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brumitt in view of Gokturk et al. (US 200301699060).

Brumitt teaches number of limitation of the claims including comparing of objects to a pre-characterized objects being templates for identification of newly generated objects however, Brumitt fails to specifically teach having a particular database with plurality of templates stored therein related to detected objects. Gokturk teaches, limitation of claim 2, further step of comparing the depth map to a plurality of templates to identifying a match between the depth map and at least one template (Paragraph 131, Lines 1-5, wherein depth maps images of a face (Paragraph 130) is being matched to the templates in a database);

Gokturk teaches limitation of claim 3, method further including a step of adjusting a parameter of the platform in response to a match (Paragraph 152, Lines 5-7, where the operation of the airbag onboard is adjusted based on the occupant);

Gokturk teaches limitation of claim 4, wherein the parameter is selected from an airbag (Paragraph 152, Lines 5-7);

Gokturk teaches limitation of claim 6, accessing at least one template from a database comprising a plurality of templates (Paragraph 132, 1-3, wherein a database of templates or faces is provided for accessing;

Gorturk teaches limitation of claim 7, the plurality of templates represent objects at varying positions and poses relative to the platform (Paragraph 105, Lines 1-8, wherein translational and pose data is incorporated into modeling process).

It would have been obvious to an ordinary skilled person in the art to utilize Brumitts characterization process of the regions based on the depth image of the scene and storing them for later use (Column 11, Lines 11-21) with Gorkturks system because, the characterization of the scene of an interior of a vehicle and identifying the person entering the vehicle by matching technique to the previously stored scene images requires *less processing* than recognition and classification of Gorkturks and this utility is further helpful in determining airbag deployment process based on the previously stored object poses (Paragraph 54).

7. Claims 8, 9, 17 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brumitt in view of Trajkovic et al. (US 20030112132).

Regarding claims 8 and 9, Brumitt teaches number of limitations of the claims however, Brumitt fail to specifically teach at least one template in the plurality of templates is a model of a vehicle and/or pedestrian or the collision avoidance system of

Art Unit: 2621

the claims. Trajkovic teaches templates generated for detecting of pedestrians and vehicles (Paragraph 30, Lines 6-16). It would have been obvious to an ordinary skilled person in the art to utilize identifying of objects based on segmented regions in reference to a ground plane of a scene of Brumitts system with Trajkovic et al. in order to match vehicles or pedestrians to specific regions and not the whole scene.

Brumitt teaches limitation of claims 17 and 29 substantially, a collision avoidance system comprising: a collision detection system comprising (there are no weights given to either collision avoidance or detection because they are not referred or recited in the body of the claim and therefore are only considered as an intended use): a stereo image preprocessor for preprocessing said imagery (Column 8, Lines 1-5, process action 300 is the preprocessor); a map generator for producing from said preprocessed imagery a map referenced to an assumed ground plane (Column 8, Lines 1-8, wherein range images being the depth map images are generated with the ground area being part of the scene in the images); and a target processor for determining the actual ground plane from said map (Column 11, Line 59 through Column 12, Line 4, where a actual ground plane is defined based on the assumed ground boundary pixel analysis of step 312 of figure 3 for further target or object processing step 316);

However Brumitt does not specifically teach a platform; a stereo camera pair for producing imagery of a scene of the claims. Trajkovic teaches stereo cameras for producing a stereo image (Paragraph 36, Lines 1-16). It would have been obvious to an ordinary skilled person in the art to utilize pair of cameras of Trajkovics system in



order to account for curvatures and non-linearities of the optics of a camera (Paragraph 34, Lines 12-17).

***Allowable Subject Matter***

8. Claims 5, 10, 18-20 and 22 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The following is a statement of reasons for the indication of allowable subject matter: the prior art of record does not teach depth image template matching based on criteria of claim 5, removing the actual ground from the map image of claims 10 and 18; collision detector estimating the size of the detected potential threat of claims 19 and 22 combined with other features and elements of the claims.

9. Claims 11-16 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action. The following is a statement of reasons for the indication of allowable subject matter: the prior art of record does not teach removing the actual ground from the map image of claim 11 combined with other features and elements of the claim.

10. Claims 23 and 28 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims. The following is a statement of reasons for the indication of allowable subject matter: the prior art of record does not teach removing the actual ground from the map image of claim 23 and refining

Art Unit: 2621

the estimated height and with of a target, combined with other features and elements of the claims.

11. The following is an examiner's statement of reasons for allowance: claims 24 and 25 are allowed because, the prior art of record specifically Brumitt, Gorkturk et al. and Trajkovic et al. by themselves or together do not teach removing the ground plane from the map combined with other features and elements of the claims.

***Other prior art cited***

12. Prior art of record cited and not relied upon is considered pertinent to applicant's disclosure.

The US Patent Application 20040223630; US Patent Application 20030139865; US Patent Application 20030048930; US Patent Application 20020183906; US Patent 6,421,463; US Patent 6,169,516; US Patent 5,745,126; US Patent 5,581,638; US Patent 5,563,988; US Patent 5,109,425 and US Patent 4,695,959 variously teach object detection, tracking and collision avoidance related to applicant's invention as claimed.

***Contact information***

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shervin Nakhjavan whose telephone number is (703) 306-5916. The examiner can normally be reached on Monday through Friday from 8:00 am to 5:30 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bhavesh Mehta, can be reached at (703)308-5246.

**Any response to this action should be mailed to:**  
Assistant Commissioner for Patents  
Washington, DC 20231

Art Unit: 2621

Or faxed to:

(703) 872-9306 for **formal** communications, please mark "**EXPEDITED PROCEDURE**"

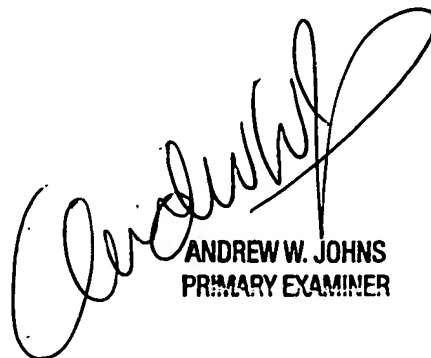
or:

for **informal** or **draft** communications; please label "**PROPOSED**" or "**DRAFT**".

**Hand delivered responses** should be brought to Crystal Park 2, 2121 Crystal drive, Arlington, VA, sixth floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application should be directed to the Tech center 2700 customer service office (703) 306-0377.

Shervin Nakhjavan  
Patent Examiner  
Group Art Unit 2621  
February 14, 2005.



ANDREW W. JOHNS  
PRIMARY EXAMINER